

**Conference:** Exploring Strange New Worlds

**Location:** Flagstaff, NM

**Dates:** May 2-6, 2011

**Title:** "AN INTEGRAL-FIELD SPECTROGRAPH FOR A TERRESTRIAL PLANET FINDING MISSION"

**Presenter:** Sally Heap

**Abstract:**

We describe a conceptual design for an integral field spectrograph for characterizing exoplanets that we developed for NASA's Terrestrial Planet Finder Coronagraph (TPF-C), although it is equally applicable to an external-occultor mission. The spectrograph fulfills all four scientific objectives of a terrestrial planet finding mission by:

- Spectrally haracterizing the atmospheres of detected planets in search of signatures of habitability or even biological activity;
- Directly detecting terrestrial planets in the habitable zone around nearby stars;
- Studying all constituents of a planetary system including terrestrial and giant planets, gas and dust around sun-like stars of different ages and metallicities;
- Enabling simultaneous, high-spatial-resolution, spectroscopy of all astrophysical sources regardless of central source luminosity, such as AGN's, proplyds, etc.